International Journal of Recent Development in Engineering and Technology
Website: www.ijrdet.com (ISSN 2347-6435 (Online) Volume 15, Issue 06, June 2026)

# Communication Issues in Multidisciplinary Research Teams

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***Abstract*- Research teams from various disciplines are required to address complex global issues. They include vast areas of different knowledge from scientific, engineering, and social sciences, and practitioner backgrounds. These diverse backgrounds ensure that each view has its base; however, because of the multidisciplinary approach, these teams lack shared disciplinary citation, orientation, valuation, and different ways to apply their findings. This information is valuable because it looks at the current state of communication barriers and plans for creating a new primary way of communication used in each of the literature sampled research studies or projects. They examine differences in meanings, how social aspects in project disciplines break down, and how technologies do not align with them. Moreover, there is no shared system for measuring collaboration in the literature. Practical advice includes shared vocabularies for each discipline and educational modules that build understanding across different fields. Inclusive leadership cultures and standardized digital collaboration tools are also suggested. It is crucial to assess communication barriers in today's open information environments. This helps promote new ideas and teamwork in multidisciplinary groups, which improves research efficiency and maximizes the impact of collaboration.**

***Keywords*-- multidisciplinary, communication barriers, collaboration, interdisciplinary, team dynamics, knowledge integration.**

## I. Introduction

The challenges of today's world require us to find comprehensive solutions.

Multidisciplinary research teams in academia are especially visible in fields such as environmental science, artificial intelligence, and biomedical engineering. Teams of people with diverse academic backgrounds are everywhere, working toward a shared mission and contributing to various parts of a larger problem.

MIt's no longer surprising to find researchers from seemingly disparate fields collaborating. Multidisciplinary research teams are the norm rather than the exception.

This study aims to identify barriers to communication that arise while working in multidisciplinary research teams and offer remediation strategies. People in multidisciplinary settings come from different fields and have different vocabularies, research philosophies, communication styles, and expectations.

Nevertheless, these capabilities often do not automatically translate into effective communication skills, which rely on one's ability to successfully navigate differences.

Several studies have outlined the benefits, opportunities, and challenges of multidisciplinary research. Commonalities are often called upon in the literature for multidisciplinary research collaborations, as they stimulate fuller perspectives and better problem solving. Although a multitude of characteristics makes communication and collaboration problems between multidisciplinary teams acceptable, communication problems are often unavoidable.

## II. Literature Review

Terminological Confusion Heath and Luff (2000) and Pennington (2011, 2012) highlighted that many terminologies are unique and distinct in many ways from field to field. For instance, models may represent a formulaic mathematical model in physics, a conceptualization in sociology, or a physical model, prototype, or experiment in engineering.

Different Epistemology Each discipline has an epistemic predisposition - a particular attitude about gaining, validating, and interpreting knowledge. A psychologist may appreciate empirical studies to ascertain validity in statistical samples, while a historian can appreciate knowledge in a narrative (qualitative) and contextual nature. Dissimilarity in epistemic predispositions can result in conflict associated with research design, interpretation of qualitative and quantitative data, and acceptable conclusions.

Different Communication Style Miller and his associates (2011, 2012) indicate that research shows scientists sometimes favor using shorter, more focused, shorter, data-propelling communication while social scientists tend to "waddle around the question" before or even seeking to make their point clear by specifics (social scientist are fond of using interpretive and exploratory language.) All these issues can affect how things are viewed and perceived within the research team.

Structural and Organizational Issues The literature also highlights the lack of structure or organization at the institutional level to help interdisciplinary players communicate, collaborate, and learn from each other.

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Very few universities or research institutions have a logical support system to help enhance multidisciplinary (such as communication).

## III. Methodology

A qualitative research design was employed to investigate these issues in depth.

- In total, 15 participants from academic and research fields were either engineering, medical, economic, sociological, or IT experts.
- Semi-structured interviews were employed for data collection to help participants narrate their personal experiences with multidisciplinary teams. In addition, a questionnaire was distributed to collect quantitative data related to the perceived barriers to communication.
- The interviews were transcribed and analyzed using thematic coding methods. Barriers related to semantics, culture, methodology, and technology were also grouped.

## IV. Findings

- A common problem that most participants complained about was the semantic differences. Even experts often confuse discipline-specific terms and disciplinary vocabulary. Because of these problems, there were many mix-ups along with delayed clarifications.
- Differences in culture and discipline among the teams were evident. The participants mentioned that the teams consisted of multiple disciplines, which affected their work ethic, communication norms, and timelines. Researchers in the humanities were not as strict with timelines, while engineers were rather rigorous with their timelines. The differences were generally frictional in nature, which lowered the level of cohesion.
- The participants reported disagreements related to the research methodologies. Researchers of quantitative studies believe that qualitative studies are not rigorous enough. However, qualitative researchers believe that quantitative models oversimplify the complexity of human behavior.
- Many teams reported having incompatible software tools and data formats, which were technology-related barriers. As there was no standard format, sharing of documents, controlling of revisions, and co-creation of shared texts became difficult.

## V. Discussion

These findings are consistent with those of previous studies, indicating that communication within multidisciplinary teams is complicated. It requires some effort from the team and help from the institution to tackle these challenges.

- Teams must take cognizance of the relevant terms for their specific teams and develop a glossary together. It can be a 'live' document that will change throughout the life of the project.
- Workshops expose members to the basics of other disciplines. Interdisciplinary training programs can help build respect and understanding for each other's work and values.
- Importance of Leadership. It is important for leaders to act as mediators in conflict management, keep an eye on inclusive, and develop open communication with all stakeholders. Leadership changes may allow different disciplines to have a say.
- Use of Collaboration Platforms Digital platforms (i.e., Slack, Trello, and Miro) are standardized to maintain transparency, facilitate communication, reduce misunderstandings, and obtain better working agreements.

## VI. Recommendation

The following recommendations are made based on the results of this study.

- Glossary: Initiate a project that enables the creation of a lexicon.
- Schedule a weekly "check-in meeting" to discuss only communication issues.
- The mentorship program calls for the involvement of less experienced team members with multiple mentors from various disciplines.
- Universities and funding bodies mandate communication training for operationally oriented large-scale interdisciplinary research projects (Institutional Policies).

## VII. Conclusion

Success in multidisciplinary research is attributed to effective communication among researchers. The research process becomes broader when various academic fields participate, which helps new ideas grow, even though groups may experience a high degree of difficulty when diverse views meet.

Many people believe that recognizing and fixing the walls that stop communication is necessary for those who want to participate in multidisciplinary research. Obstacles in communication can be managed by scholars when the right help is provided by the groups and organizations involved in the research. These scholarly groups become more unified and creative as communication improves because effective methods are used for several days.

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